Fluvial Geomorphological Features

Accretion Ridges	AR	Hanging Ravines	HR	Ribbon Lake (From River Ruts)	RL
Bell Hole	BEL	Impact Crater	IC	Right Angle Ravines	RAR
Blue Hole	BH	Marine Canyons	MC	Reverse Canyons	RC
Cataracts	CA	Marine Terraces	MT	River Ruts	RR
Cataracts - Double Cataracts	CA2	Mega scale River channels	MRC	River Terraces	RT
Cataract Ridge	CAR	Massive Deep Ruts	MR	Salt Formations	SF
Coastal Cataract	CCA	Mesas	ME	Scalloping	SC
Coastal Expansion Bar	CEB	Mounds	MO	Scarp edge (U-Shaped part of CA)	SE
Cenotes	CE	Natural Bridges	NB	Sedimentary Intrusions	SEI
Circular Ravines	CIR	Open-Ceiling Cave	OCC	Sheet water flow	SW
Circular Ruts	CRU	Oval-Shaped Ponds	OP	Streamlined sediments	SS
Continental shelf	CS	Parallel path features/Sheet Water	PAP	Sudden Ravines	SR
Corrugated Ripple	CR	Parallel Canyons	PC	Terraced Landscapes	TL
Current Ruts	CUR	Pitting	PI	Underfit Streams	US
Crescent Ruts	CRS	Parallel Path Features	PAP	Underwater Scablands	USL
Debris Flow Lobe	DF	Plunge pools	PLP	U-Shaped Ravines	UR
Drumlins	DR	Potholes	PH	U-Shaped Valleys	UV
Esker	ES	Pushed sediments	PS	Volcanic Pipe	VP
Expansion bars	EB	Rectangular Lake (2 scarps)	REL	V-Shaped Valleys	VS
Fluvial plucking	FP	Reverse Canyons	RC	Salt Filled Erosion	SF
Glacial Polish	GP	Ripples	RI	Water Gap (across Mountain range)	WAG
Graded beds	GB	River Ruts	RR	Wind Gap (no longer water flowing)	WIG

The United States

COLUMBIA RIVER GORGE

Washington
SF, CAR, SR, SE, PP, RL, CA, CA2, WAG, PS, MO, RP, CUR, PAP, PH, RI [73m], RT (w=3.5km), PH [D=114m], PH [D=183m], PH [D=64m]

Oregon
SE [5.6km], UR, CA, WAG, CAR, PC, OCC, SF, RC, SC, MO, AR, MO [1128m], CUR, RI [366m], US (clusters), PH [D=70m]

California
CRS, AR, FP, GP, RL, PP, SR, UR, ME, CAR, CCA, NB, NB (granite), RT, MC, WAG, MO, CUR, RI [9.1m], RI [1158m], RI, PS, RT, AR, MT, USL, PH [HIGH ELEVATION]

3SE COMBINED [42km]

Nevada
PS, AR, PC, SF, WAG (SNAKE RIVER), PAP, RI [73m]

Idaho
CAR, PS, RI [37m], PS [1615m], SS, Elev. RT

Montana
RI [46-167m], RI [85m], SF, CRU, RT, MO, AR

Utah
CA2 [3.6km], UV, HR, CAR, AR, PH [D=15m], NB, WAG, RC, SR, MO [2529m. ELEV.], CUR, RI (w=457m), PH, PS [1920m. ELEV.], CRS [1.1km], MT (name changed to STAIRCASE → 1562m → 1383m → 1359 → 2351m)

Arizona
CRS [1km], NB, OCC, WAG, SR, CA [1.9km], CA2, ME, US [9.1km], EB [21km], IC, US [0.5/100] - 200x, PH [46m], RT [2500m] DIAM, RT (w=1.1), (4.8km), RT [1676m], RT [1859m], PH [177m]

New Mexico
ME, BH, PS, MO [2286m] ELEV., MT [2091m. ELEV.]

Wyoming
RI [83m], RI [152m], PS, AR [2438m], VP

Colorado
CA2, PP (POINTED), SE [3658m], SR, CA, CA [POINTED SHAPE], SR, MO, MO [3048m], MRC [21km], RT, CRU, PH, PH [DIAM. = 400m]

North Dakota

South Dakota
MRC [112km]

Nebraska
MO [1.45km SIZE], RI [1.9km] W

Kansas

Oklahoma
PP, ME, MO, EB [31.2km], MT, MT [1920m.] ELEV.

Texas
MT [700m ELEV], MT [256m ELEV.]

Minnesota

Iowa

Missouri
US [MISSOURI RIVER] 1.1/100, 91 TIMES OUTPUT!, MO

Arkansas
PAP, PS, MO [1737m]

Louisiana
MO

Mississippi
US [MISSISSIPPI RIVER] 1.1/100, 91x OUTPUT

Wisconsin

Michigan
MO, NB, CCA [123km], CCA [74km], CCA [38.4km], CRS [640m]

Illinois

Indiana

Ohio
CRS, RR

Kentucky
WIG (Cumberland)

Tennessee
WIG (Cumberland), PP

Alabama
VP

Georgia

Florida
SC, PH, BH, PP, PH

South Carolina

North Carolina
OP

Virginia
WIG, The Cumberland Gap

West Virginia
UR, NB, WIG

Pennsylvania
WAG, DELAWARE WATER GAP

New York
SR [FINGER LAKES], PH

Vermont

Maine

New Hampshire
Massachusetts

Rhode Island
Connecticut

New Jersey
WAG, DELAWARE WATER GAP

Delaware

Maryland

Alaska
WAG (dry), CAR, RR, 3CCA [3.7km], MC, RR, DR, CA2 [2.2km], PP, MO, MRC [12km], RT, AR, PH [482m wide]

GULF OF Alaska
MC [4572m DEEP]

Hawaii
PP, CA2, SR, CCA, OCC, MC, RC, CA, UV, CAR, PS, USL

PH = Puerto Rico

PS
SF [CATASTROPHIC SALT DEPOSITION]

SAN CLEMENTE ISLAND MARINE TERRACE MIS-MATCH

MT.

ONE SIDE	OTHER SIDE
160m	335m
107m	183m
49m	134m
9m	76m
	55m
	46m

GENERAL USA [STATE NOT SPECIFIED]

SR [1830m ANL]
CIR

North America

[see other map]
ARIZONA
[see other map]
NEW MEXICO
PP, ME, MO, EB [31.2 km]
MT, MT [1920m. ELEV.]
TEXAS
MT [700m. ELEV.]
MT [256m. ELEV.]
ARKANSAS
US MISSISSIPPI RIVER 1.1/100 91 X OUTPUT
MISSISSIPPI
MO
LOUISIANA
ALABAMA
GEORGIA
SC, PH, BH, PP, PH
FLORDIA
Atlantic Ocean
SR, UV, ME
WAG, MC,
Chihuahua
CE, CA, PC,
CCA [9.3km],
OCC, CCA [24km]
La Paz
SF
MEXICO
MO
MO [2377m], PAP,
RI [w=122m]
RI [w=213m]
RI [w=3.52km]
Tampico
Guadalajara
RT [w=19.2km]
Mexico
Veracruz
CAC, USL, CE,
CE [D=70.1m]
Acapulco
Oaxaca
CE [D=768m]
PS.
SF [CATASTROPHIC SALT DEPOSITION]
Gulf of Mexico
THE BAHAMAS
Nassau
BH
Havana
CUBA
TORTUGA MT [225m]
DOMINICAN REPUBLIC
HAITI
PH [D=41m]
MT
Port-au-Prince
Santo Domingo
CAYMAN ISLANDS
George Town
JAMAICA
Kingston
CE
CRU
VP
BH
BELIZE
Belmopan
CA 2 [4 km]
MT [2225 m]
GUATEMALA
MT [2377m]
Guatemala
HONDURAS
Tegucigalpa
San Salvador
EL SALVADOR
NICARAGUA
Managua
San José
COSTA RICA
PANAMA
Panama
USL
PH
COLOMBIA
Pacific Ocean
Caribbean Sea
ARUBA
NB
NETHERLANDS ANTILLES
CA [1.6 km]
PP, CA, MO, PS,
CUR [2143m]
CUR [2195m]
VENEZUELA
PP
GUYANA
Port-of-Spain
TRINIDAD AND TOBAGO
St. George's
GRENADA
San Juan
PUERTO RICO
Basseterre
ST. KITTS AND NEVIS
ANTIGUA AND BARBUDA
GUADELOUPE
Basse-Terre
DOMINICA
Roseau
MARTINIQUE
Fort-de-France
ST LUCIA
Castries
BARBADOS
Bridgetown
ST. VINCENT AND THE GRENADINES
Kingstown

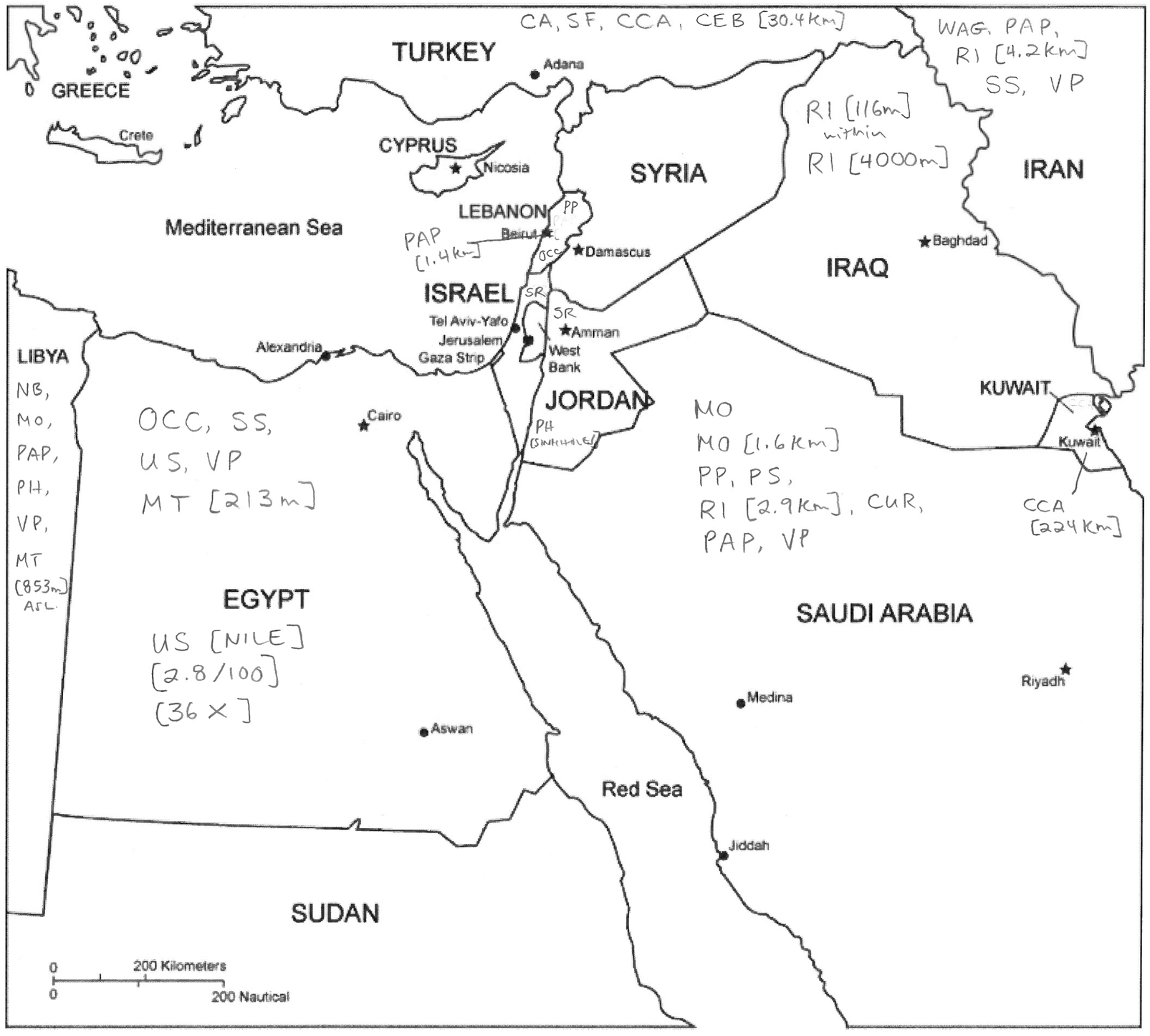
Los Angeles
UNITED STATES
El Paso
New Orleans
Monterrey
Gulf of Mexico
Miami
BERMUDA
Nassau
BH
THE BAHAMAS
MEXICO
Havana
CUBA
Guadalajara
Mexico
MT, PH [D=916m]
TORTUGA - MT [225m]
DOMINICAN REPUBLIC
Santo Domingo
BH
JAMAICA
HAITI
BELIZE
Belmopan
Kingston
Port-au-Prince
PUERTO RICO
HONDURAS
Guatemala
GUATEMALA
DOMINICA
ST. LUCIA
Caribbean Sea
San Salvador
Tegucigalpa
BARBADOS
EL SALVADOR
NICARAGUA
ARUBA (NB)
Managua
San José
TRINIDAD AND TOBAGO
Panama
CA [1.6Km]
Caracas
Port-of-Spain
PP, CA, MO, PS
COSTA RICA
VENEZUELA
GUYANA
PANAMA
Medellin
Georgetown
CUR [2143m]
Bogotá
Paramaribo
FRENCH GUIANA
CUR [2195 m]
Cayenne
COLOMBIA
Cali
PH
SURINAME
GALAPAGOS ISLANDS
ECUADOR
ME, SE, MO, PS, SS, EB [592 km]
Quito
CEB
RC
RL, PP, MC, MO, MO [3810m]
Belém
Manaus
PS [3962m HIGH]
SS [1920m]
MT, CAC, SL, USL, VP
Fortaleza
Trujillo
MT
VP [SUBDUCTION AFTER] - VARGEAO DOME "CRATER"
PERU
CRS [d = 1.6Km]
BRAZIL
Lima
CRS [2.1Km]
REL SF [4572m]
VP - SIERRA DE CANGALHA "CRATER"
RT [4815m HIGH]
RT [4907m HIGH]
Salvador
La Paz
Brasilia
BOLIVIA
PAP [960m]
CUR
Antofagasta
CRS
PARAGUAY
CA [6.9Km]
Sao Paulo
Rio de Janeiro
CA2 [6.6 Km]
Asunción
ME, SR
SR [914m ELEV.]
CHILE
MU [2.3Km]
PP, SE [11.2Km]
SE [96Km], AR, PC, SF, WAG, SR, RC, MO, SF [4572m ELEV.]
Santiago
Rosario
Buenos Aires
URUGUAY
Concepción
WAG
Montevideo
ARGENTINA
NB, AR
PAP, PS, SS
SS [1280m ELEV.]
EB [208 Km]
MT, RT
MRC [58Km]
MRC [32Km]
CAR, SE [29Km]
PH DIAM [960m]
FALKLAND ISLANDS
OP
CR [d = 488m]
Cape Horn
North Pacific Ocean
South Pacific Ocean
North Atlantic Ocean
South Atlantic Ocean
CA2 [9 Km]
MT [2225m]
MT [2377m]
USL
0
1000 Miles

Africa
CCA [168 km] (GIBRALTAR)
CCA [392 km] (GIBRALTAR)
MC, MO, PAP, PS, VP, SEI
PP
SF
TUNISIA
MOROCCO
CA2 [8.2 km]
MO
CCA [14.4 km]
WESTERN SAHARA
SS
MO, PAP, RI [2.7 km]
ALGERIA
VP - "TIN BIDER CRATER"
NB, MO, PAP, MT [853m]
LIBYA
PH, VP
OCC, SS, US, VP
MT [213m]
EGYPT
US [Nile] [2.8/100] [36 Times]
MAURITANIA
VP "EYE OF THE SAHARA"
MALI
GP
SR, CA, PAP, VP
NIGER
PAP
CUR
RI [2.4 km]
CUR
CHAD
US, VP
SUDAN
ERITREA
SENEGAL
THE GAMBIA
GUINEA BISSAU
GUINEA
BURKINA
BENIN
VP TOGO
GHANA
COTE DTVOIRE
SIERRA LEONE
LIBERIA
NIGERIA
CAC
CAMEROON
AFRICA SF
EQUATORIAL GUINEA
REP. OF THE CONGO
GABON
CENTRAL AFRICAN REPUBLIC
SOUTHERN SUDAN
CA2, PC, SF, RC, MO, MO [4084 m]
DJIBOUTI
CA [11.4 km] PP, MO
ETHIOPIA
EB [19.5 km]
RT, AR [1494m]
AR [1890m]
MT [2042m]
US [0.7/100] [143x]
SOMALIA
MC, VP, SR [10.8 km]
DEMOCRATIC REPUBLIC OF THE CONGO (ZAIRE)
UGANDA
MO
KENYA
CUR [74 km]
PS
RI [183m]
RI [213m]
RWANDA
BURUNDI
Lake Victoria
PP, SF, PAP,
Lake Tanganyika [29km]
MO, MRC
TANZANIA
Zanzibar
CCA
Indian Ocean
South Atlantic Ocean
ANGOLA
MC, MO, PAP, PS
ANGOLA
PS [w/ MO]
MALAWI
Lake Nyasa
GP
MO
ZAMBIA
CUR
MOZAMBIQUE
CEB
MOZAMBIQUE CHANNEL
PS
MADAGASCAR
CUR
CRS [5.6 km]
RI [366m]
RI [427m]
REUNION ISLAND
RC
CUR, GP, CRS [10.8 km]
NAMIBIA
CA [46 km]
MO
MO [3.7 km]
RI [2.4 km]
PAP
VP, CUR
REL, MO,
BOTSWANA
MO [3.7 km]
SF [4572m]
SR [2.7 km]
CCA [46 km]
SF RI [396m]
ZIMBABWE
SWAZILAND
PAP
VP
CUR
LESOTHO
SE CUR
PH
SOUTH AFRICA
EB [1.1 km]
AR [518m]
RT [1737m]
AR [671m]
0
500
1000 Nautical Miles

Europe

Greenland Sea
Barents Sea
Norwegian Sea
Murmansk
White Sea
Severnaya Dvina
CA, SR, CCA
Reykjavik
NB
ICELAND
WAG, PS
CRS [160m]
CCA [24Km]
PH
PAP
CRS
FP
RR
PP
CUR,
CA, CCA, RT
FAROE ISLANDS
SWEDEN
FINLAND
PH, NORWAY
PH [305m ASL
Oslo
Gulf of Bothnia
Lake Ladoga
Helsinki
Gulf of Finland
St. Petersburg
SHETLAND ISLANDS
ORKNEY ISLANDS
3CCA
HERBRIDES
PP
RT
CCA
MT,
US
Stavanger
Stockholm
ALAND ISLANDS
Tallinn
IC [100m]
ESTONIA
IC [80m]
RUSSIA
Volga
North Atlantic Ocean
Edinburgh
Belfast
UNITED
North Sea
Gotaborg
Gotland
Riga
CAC
LATVIA
Moscow
PH [CIMTAN]
PP, SR, MT
Doublin
Irish Sea
UV
RT/PH [ON TERRACED LANDSLAPE] IN LINE
Leeds
IRELAND
PH [D=143m]
SR, MT
KINGDOM
CCA [22.4Km]
CUR
London
Baltic Sea
Oland
LITHUANIA
Vilnius
Minsk
Dnipro
DENMARK
Copenhagen
Kaliningrad
RUSSIA
Bornholm
Hamburg
NETHERLANDS
Amsterdam
Bremen
Gdansk
IC
MORAJKO CRATER
w=100m
BELARUS
Brest
Warsaw
Berlin
Oder
Elbe
VP-RIEF "CRATER"
Leipzig
PH [1219m ASL]
Kiev
Rivne
Dnipro
Celtic Sea
English Channel
Brussels
BELGIUM
GERMANY
POLAND
Wisla
Krakow
UKRAINE
CCA [117Km] CEB [89Km]
CCA [24Km]
Switz.
RAR
CAR
WAG (dry)
Saine
Paris
LUX
Luxembourg
US [0.8/100]
Rhein 125X
Prague
CZECH REPUBLIC
SLOVAKIA
MOLDOVA
CCA [18Km]
Strasbourg
Munich
Danube
Bratislava
Vienna
Budapest
Chisinau
Odesa
Loire
MRC [45Km]
LIECH
AUSTRIA
HUNGARY
RT
w=12.5Km
ROMANIA
Bay of Biscay
FRANCE
Bern
Vaduz
SWITZ
Geneva
Ljubljana
Zagreb
Bucharest
Black Sea
Bordeaux
Lyon
PH
Po
Venice
SLOVENIA
BOSNIA AND HERZEGOVINA
Belgrade
Danube
PP, WAG
NB, MC, PH, CRU
Genoa
ITALY
SERBIA
CCA [168Km]
SE [3.5Km DIAM]
MO
Andorra la Vella
MONACO
Marseille
Ligurian Sea
San Marino
PH (884m)
Sarajevo
BULGARIA
Porto
NB
OCC
ANDORRA
Adriatic Sea
MONTENEGRO
Podgorica
KOSOVO
Pristina
Sofia
NB
Skopje
NORTH MACEDONIA
CA
PORTUGAL
Madrid
PH [ON SIDE]
Barcelona
Corsica FRANCE
Rome
PH (SUMMIT)
MT [762m]
Tirana
ALB
CCA [10Km]
CCA [26Km]
TURKEY
Lisbon
Tajo
VP
MC
SPAIN
Valencia
Balearic Sea
Sardinia ITALY
Naples
Tyrrhenian Sea
GREECE
RC
MO [1189m ASL]
BALEARIC ISLANDS
Cagliari
CA [1.8Km]
Sevilla
PH [1676m ASL]
Mediterranean Sea
Palermo
Ionian Sea
Athens
CCA 40Km
Gibralta
CCA [392 Km]
Alboran Sea
Algiers
Tunis
Sicily
PH [1676m ASL]
Rhodes
MO
Rabat
CCA [168Km]
MC, MO, PAP, PS, VP, SEI
PP
TUNISIA
Valletta
CCA [1.9Km]
Crete
CA2 [3.2Km]
MOROCCO
VP
TIN BIDER "CRATER"
SF
MALTA
300 Kilometers
0
0
300 Miles

Israel / Middle East



RUSSIA

IRELAND
CCA [22km]
CUR
UV
UNITED KINGDOM
North Sea
Norwegian Sea
PH [305m]
NORWAY
FP, RB, PP, CUR, PH
CCA [24km]
CRS [160m]
SWEDEN
PAP
PH
BELGIUM
NETHERLANDS
GERMANY
FINLAND
Baltic Sea
IC
MORASKO CRATER
POLAND
[100m]
CZECH REPUBLIC
AUSTRIA
HUNGARY
SLOVAK REPUBLIC
BELARUS
CCA [117km]
CEB [88km]
ROMANIA
MOLDOVA
CCA [24km]
NB
BULGARIA
UKRAINE
PH [1219m] elev.
Black Sea
Ankara
CA, SF,
TURKEY
CCA,
CEB [30.4 km]
GEORGIA
ARMENIA
SYRIA
AZERBAIJAN
Caspian Sea
RI [116]
WITHIN
RI [4000m]
Baghdad
VP
MO
CUR
PAP
MO [1.6km]
PP, PS,
IRAQ
SAUDI ARABIA
RI [2.9km]
KUWAIT
Persian Gulf
Tehran
IRAN
WAG, PAP,
RI [4.2km]
SS, VP
Ashkhabad
TURKMENISTAN
Moscow
Kiev
Barents Sea
SVALBARD (Norway)
NOVAYA ZEMLYA
Kara Sea
SEVERNAYA ZEMLYA
Laptev Sea
NEW SIBERIAN ISLANDS
Arctic Ocean
CCA [5.6km], CCA [70.4 km]
CRS [34 km], SE, SE [45km], CCA [96 km],
CCA [160km], MO, PAP, CR [1.9km],
MRC [54km], MRC [67.2 km],
EB [160km], RT [68° N LATITUDE]
SEI, CRU
Laptev Sea
Bering Sea
BERING ISLAND
MT
Sea of Okhotsk
North Pacific Ocean
SAKHALIN
CCA
CCA [19.2km]
CCA [42km]
MC [768 km LONG]
Sea of Japan
JAPAN
Tokyo
MT
NORTH KOREA
SOUTH KOREA
VP
CUR
CRU
Yellow Sea
Beijing
CHINA
SF, PAP, CUR [4420m ASL], PS
SS [4572m ASL]
US [3.45/100]
29 TIMES BIGGER
PS [4633m ASL]
MO
FP, SR, RI [3.7km]
CA, SF
OP [D=13.2km]
CCA [112km]
NB, WAG (dry)
WAG, PS, BH
EB [72 km]
PP, CA, RI [W=488m]
Ulaanbaatar
MONGOLIA
PS, PS [2438m ASL]
MO [4815m ASL]
CRS [42km]
SF [4572m ASL]
SF [5120m ASL]
SF [4663m ASL]
CRS [250m width]
US [0.8/100 → 125x BIGGER], PH, RT
RI [3.2km]
MRC [32km wide]
MRC [64km wide]
CRS [8.6km], PC, SF,
RI [6.4km], MO, MO [2.1km wide]
KAZAKHSTAN
PAP, PS, RI [2.1km]
RI [4.0km] CR [3.5km]
PH
[FIELD OF POTHOLES]
Aral Sea
UZBEKISTAN
RI [518m W=]
Alma-Ata
Bishkek
KYRGYZSTAN
RT
Tashkent
Dushanbe
TAJIKISTAN
VP
RI [4.3km]
AFGHANISTAN
SS
RI [1.6km]
Kabul
PAKISTAN

Russia, East and South Asia

WAG, SR [4511m ASL]
SR [5486m ASL]
CA, CAR [8839m ASL]

UAE
PAP,
RI [1.9km] W

MO, MO [1.8km] wide
RI [2.9km]
PAP, RI [1.1km]
SS, MT, AR [853m ASL]

RI [1.6km]
RI [1.2km]
SS
SR
ME
SE
PAP
RI [396m], RI [1.6km]
CR [3.8km]
MRC [144km]
WAG
CUR
PAP, MRC [160km]
RT, CAC, PH,
VP - DHAKA IMPACT 'CRATER'
IC
LONAR CRATER [1.8km wide]
CCA [147km]
CCA [96km]
CRU
PH
BH

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